Amendments to the Specification

Please amend the specification as follows.

Please amend the paragraph beginning at page 2, line 11, as follows:

Current DVD recorders record MPEG content using a program stream format. Digital broadcasting, however, uses a transport stream format, and it is therefore preferable to directly record content using the same transport stream format. The transport stream is intended for broadcasting and communications applications, and thus does not provide for randomly accessing the transport stream. In addition, transport stream data is already digital, and can therefore be recorded without an encoding process through the DVD ~~recorder such~~ recorder, as is needed to record a program stream. A problem with storing a transport stream of this type to an optical disc or other medium is that random access, one of the greatest features of disc media, cannot be sufficiently achieved.

Please amend the paragraph beginning at page 2, line 25, as follows:

Moreover, data input using a transport stream may include data conforming to different standards and even non-standard data types. In such ~~cases~~ cases, the DVD recorder may not be able to determine the location of an intra-coded picture, or the identified address may have been recorded containing errors. A problem in this case is that when such data is replayed, data at the location of the intra-coded picture may contain errors, and normal playback may not be possible.

Please amend the paragraph beginning at page 7, line 10, as follows:

Fig. 14A describes the data structure of the video management information (video manager), focusing on the VOB table;

Please amend the paragraph beginning at page 7, line 15, as follows:

Fig. 15A describes the data structure of the video management information (video manager), focusing on the program chain information (PGC);

Please amend the paragraph beginning at page 9, line 6, as follows:

Video data can be input to a DVD recorder as an analog or digital signal. Analog broadcasts use analog signals, and digital broadcasts use digital signals. Analog broadcasts are generally received and demodulated by a ~~receiver~~ receiver, such as one built in to a television, and then input to the DVD recorder as an analog video signal in the NTSC format, for example. Digital broadcasts are demodulated ~~to~~ into a digital signal by a STB (Set Top Box) which serves as a receiver, and then input to the DVD recorder for recording.

Please amend the paragraph beginning at page 14, line 30, as follows:

Each of the lead-in area and lead-out area has a defect management area (DMA). The defect management area is an area for recording address information for defective sectors, and substitution address information indicating where the sector substituted for the defective sector is located in the substitution area.

Please amend the paragraph beginning at page 15, line 6, as follows:

Each zone area contains a user area, and a substitution area and unused area in the zone boundary. The user area is an area used by the file system for recording information. The substitution area is an area that is substituted for a defective sector when a defective sector is found. The unused area is an area that is not used for recording information, and is provided for about two tracks. The reason why the unused area is provided is as follows. The sector address is recorded to the same location in adjacent tracks in a particular zone, but in the Z-CLV control ~~method~~ method, the sector address recording position is different in adjacent tracks at the zone boundary, and this may result in misinterpretation of the sector address. The unused area is provided to prevent this.

Please amend the paragraph beginning at page 19, line 26, as follows:

The PES packet is the smallest encoding unit, and stores video data and audio data encoded using the same encoding method. That is, video data and audio data encoded with different coding methods are not contained in a same PES packet. It should be noted that if the same coding method is used, the picture boundary and audio frame boundary do not have to be

assured. As shown in Fig. 8, a combination of plural PES packets may store a single I-picture, or a single PES packet may contain ~~a~~ plural pictures.

Please amend the paragraph beginning at page 20, line 9, as follows:

As shown in Fig. 9, a TS packet comprises a TS packet header, ~~a~~ an application field, and payload. The TS packet header contains PID (Program ID) which identify several streams such as the video stream or audio stream to which the TS packet belongs.

Please amend the paragraph beginning at page 21, line 28, as follows:

Figs. 12A to 12C show the PAT table and PMAP table containing the audio stream and video stream structure of each program. As shown in these ~~figures~~ figures, the PMAP table stores information relating to a combination of video stream and audio stream which are used for each program, and the PAT table stores information relating to a combination between programs and PMAP tables. The reproducing apparatus can detect the video stream and the audio stream which are composing a program that is requested to output using the PAT table and PMAP table.

Please amend the paragraph beginning at page 22, line 27, as follows:

Figs. 14A and 14B and Figs. 15A and 15B show the data structure of the file referred to as a video management information (Video Manager file) shown in Fig. 6.

Please amend the paragraph beginning at page 24, line 26, as follows:

As shown in Fig. 15A, there are two playback ~~path~~ paths including playback path information which is originally defined and playback path information freely defined by the user ~~freely~~. The originally defined playback path information is generated automatically by the DVD recorder upon recording each object so as to specify all the recorded objects. The user-defined playback path information can be defined by the user to specify a desired playback sequence. This playback path information is uniformly referred to as program chain information (PGC information) in DVD media field, the user-defined program chain information is referred to as U_PGC information, and the original program chain information as O_PGC information. The O_PGC information and U_PGC information both compile a sequence of cell information in table form. The cell information is information indicative of a cell designating a playback

section of a particular object, in table form. The playback section of the object indicated by the O_PGC information is referred to as a original cell (O_CELL), and the playback section of the object indicated by the U_PGC information is referred to as a user cell (U_CELL).

Please amend the paragraph beginning at page 25, line 29, as follows:

As shown in ~~Fig. 16~~ Fig. 16, PGC information 50 includes at least one of cell information 60, 61, 62, 63. Cell information 60,,, specifies the object to be played back (reproduced), and further specifies the object type and playback section of the object. The sequence in which the cell information is recorded in the PGC information 50 determines the playback order of the cells designated by the corresponding cells.

Please amend the paragraph beginning at page 27, line 1, as follows:

As described with reference to Fig. 1, PS_VOB and TS1_VOB are primarily generated when the DVD recorder encodes a received analog broadcast signal to an MPEG stream. The I-pictures and time stamp data ~~is~~ are thus generated by the DVD recorder during the encoding process, the internal data structure of the stream ~~is~~ being clearly defined and known to the DVD recorder. ~~Therefore~~Therefore, there are no problems generating the map information by the DVD recorder.

Please amend the paragraph beginning at page 27, line 21, as follows:

First, I-picture is detected by detecting random access indicating information (random_access_indicator) in the application field for TS packet (as shown in Fig. 11). The time stamp is detected by detecting the PTS of the PES header. For the time stamp, PCR in the application field, or ~~ATS~~ ATS, which is the arrival time of the TS packet to the DVD ~~recorder~~ recorder, can be used instead of the PTS as the time stamp. In either case, the DVD recorder does not analyze the data structure of the video layer of the MPEG stream, but detects the location of I-pictures using system layer information which is above the video layer. This is because analyzing the video layer to generate the map information imposes significant overhead on the system.

Please amend the paragraph beginning at page 33, line 30, as follows:

With a DVD recorder thus ~~comprised~~ comprised, the user interface 211 first receives a request from the user. The user interface 211 then passes this request to the system controller 212, and the system controller 212 then interprets the request and sends requests to appropriate components of the DVD recorder.

Please amend the paragraph beginning at page 34, line 9, as follows:

In this ~~case~~ case, the system controller 212 instructs the analog tuner 213 to receive the broadcast and instructs the encoder 214 to encode the broadcast signal.

Please amend the paragraph beginning at page 34, line 22, as follows:

The system controller 212 then outputs a record instruction to the drive 221, which in ~~tern~~ turn reads data from the track buffer 220 and writes to DVD-RAM disc 100. The system controller 212 also gives the drive 221 instruction to indicate the location on the disc 100 where the data is recorded, based on the file system allocation data.

Please amend the paragraph beginning at page 36, line 21, as follows:

Recording ends when a stop recording request is received from the user. The stop recording request is passed from the digital interface 219 to the system controller 212, which in ~~tern~~ turn provides requests for stopping process of the digital tuner 215 and the analyzer 216.

Please amend the paragraph beginning at page 37, line 30, as follows:

The user interface 211 receives a request from the user. The user interface 211 passes the request from the user to the system controller 212, which then interprets the request to send control commands to the appropriate modules. When the user request is to playback PGC, the system controller 212 interprets the PGC information and cell information to determine which objects ~~is~~ are to be ~~reproduce~~ reproduced. Note that the following description assumes an original PGC including one video object (M_VOB) and one cell information.

Please amend the paragraph beginning at page 39, line 20, as follows:

Audio objects (AOB) and still picture objects (S_VOB) can also be reproduced using the same basic operation and modules, except that the internal configuration of the decoder 218 will differ somewhat. In this ~~case~~ case, the decoder 218 comprises PS decoder 205, TS decoder 206, audio decoder 207, and still picture decoder 208.

Please amend the paragraph beginning at page 39, line 29, as follows:

If the decoder 218 does not have the ability to reproduce the MPEG transport stream, the MPEG transport stream cannot be reproduced by the decoder 218. In this ~~case~~ case, the data is supplied to an external device by way of the digital interface 219 for reproduction by the external device.

Please amend the paragraph beginning at page 44, line 28, as follows:

Furthermore, while PTS and PCR information ~~is~~ are used as time information in the tables shown in Fig. 22A and Fig. 22B, it is alternatively possible to use ATS (Arrival Time Stamp) information indicating the timing when a packet is sent out from the DVD recorder.

Please amend the paragraph beginning at page 47, line 14, as follows:

The time indicated by the end address information (End) in the cell information is then compared with each PCR value stored to PCR map 811 to detect entry #j in the PCR map satisfying the following condition. ~~Thus~~Thus, the last block to be reproduced can be identified.

Please amend the paragraph beginning at page 50, line 7, as follows:

In the erasing operation, the same operation to the end block at which erasing ends (end erase block) is performed as that to the start erase block. That is, as shown in Fig. 25, if the I-picture Included Flag is set off at the PCR entry #n-1 specified by the user as the erase end location, the next entry following entry #n-1 of which the I-picture Included Flag is set on is tried to be found. When the next entry having the I-picture Included Flag set on is found, the block indicated by the PCR entry immediately before the found entry is used as the end erase block. In the example shown in Fig. 25, the PCR entry which follows entry #n-1 and first has the I-picture Included Flag set on is PCR entry #n+1, and therefore the block indicated by the entry #n

immediately before the entry #n+1 is the end erase block. Yet more specifically, the blocks indicated by entries #1 to #n are erased.

Please amend the paragraph beginning at page 52, line 10, as follows:

What is important to note in the present embodiment is that analyzer 1906 ~~geberates~~ generates the above-described PCR map and PTS map. If the recorder does not have the ability to generate the PTS map, that is, if it cannot analyze the MPEG stream to detect the video data, all I-picture Included Flags in the PCR entries are cleared to 0, and the I-picture flag validity flags in the D_VOB_GI are also turned off (set to "invalid").

Please amend the paragraph beginning at page 58, line 13, as follows:

For playback and erasing ~~operations~~ operations, the block number "j" of the block where playback or erasing ends is obtained from the end location information of the cell information using equation (2) above, but the following equation can alternatively be used to find the end block in the opposite direction.

Please amend the paragraph beginning at page 59, line 2, as follows:

As also noted above during the erase ~~operation~~ operation, the start and end erase blocks are determined by detecting the beginning of an I-picture. This operation can be omitted and the start and end positions of the group of blocks to be actually deleted can be determined by simply mapping the start and end blocks of the segment indicated by the user to the respective adjacent blocks.